PAYLOAD HAZARD REPORT

		a. NO: GHR-AMS02-003
b. PAYLOAD: Alpha Magnetic Spectrometer-02 (AMS-02) GSE		c. PHASE: II
d. SUBSYSTEM: Materials	e. HAZARD GROUP: Materials	f. DATE: May 2008
g. HAZARD TITLE: Liquefaction of Atmospheric Gases		i. HAZARD CATEGORY ☒ CATASTROPHIC ☐ CRITICAL

h. APPLICABLE SAFETY REQUIREMENTS:
KHB 1700.7C, Sections: 4.3.9 GSE Materials
For Materials of Flight Hardware, see AMS-02-F10

j. DESCRIPTION OF HAZARD:

The liquefaction of atmospheric gases—due to coming in contact with cryogenic hardware—reacts with incompatible materials causing damage to hardware or injury to personnel.

k. HAZARD CAUSES:

1. Improper insulation of cryogenic hardware (tanks, piping, etc.).
2. Lack of containment of liquefied atmospheric gases.
3. Materials that are incompatible with liquefied atmospheric gases are located near exposed cryogenic systems.

l. HAZARD CONTROLS:

(See continuation sheet)

m. SAFETY VERIFICATION METHODS:

(See continuation sheet)

n. STATUS OF VERIFICATION:

(See continuation sheet)

o. APPROVAL	PAYLOAD ORGANIZATION	SSP/ISS
PHASE I		
PHASE II	TRENT MARTIN 10/3/08	10/5/08
PHASE III		

PAYLOAD HAZARD REPORT CONTINUATION SHEET	a. NO:	GHR AMS02--001
b. PAYLOAD: Alpha Magnetic Spectrometer-02 (AMS-02) GSE	c. Phase	II

k. HAZARD CAUSES:

1. Improper insulation of cryogenic hardware (tanks, piping, etc.).

l. HAZARD CONTROLS:

1.1 Insulate cryogenic hardware to preclude contact of cryogenic temperature surfaces with the atmosphere.

1.2 Insulation will be designed to preclude contact of cryogenice temperature surfaces with the atmosphere.

1.3 Insulation will be installed as per design drawings.

m. SAFETY VERIFICATION METHODS:

1.1.1 Review of system drawings to ensure insulation of cryogenic systems.

1.2.1 Review of insulation design drawings.

1.3.1. Inspection to ensure insulation is installed per design drawings.

n. STATUS OF VERIFICATION:

1.1.1	Open
1.2.1	Open
1.3.1	Open

PAYLOAD HAZARD REPORT CONTINUATION SHEET	a. NO:	GHR AMS02--003
b. PAYLOAD: Alpha Magnetic Spectrometer-02 (AMS-02) GSE	c. Phase	II

k. HAZARD CAUSES:

2. Lack of containment of liquefied atmospheric gases.

(Note: The cause and control are dealing with a contingency, not day-to-day operations.)

l. HAZARD CONTROLS:

2.1 Use catch pans and "diapers" to contain liquefied atmospheric gases, preventing them from coming in contact with incompatible materials or electrical components.

2.2 Use of warning signs to prevent personnel from coming into contact with liquefied atmospheric gases.

2.3 Use of keep out zones to prevent personnel from coming into contact with liquefied atmospheric gases.

m. SAFETY VERIFICATION METHODS:

2.1.1 Review of AMS-02 flight and GSE layout to ensure adequate containment is provided.

2.1.2 Inspection of containment to ensure proper functioning.

2.2.1. Review of AMS-02 safety procedures.

2.3.1 Review of AMS-02 safety procedures.

n. STATUS OF VERIFICATION:

2.1.1 Open

2.1.2 Open

PAYLOAD HAZARD REPORT CONTINUATION SHEET	a. NO:	GHR AMS02--003
b. PAYLOAD: Alpha Magnetic Spectrometer-02 (AMS-02) GSE	c. Phase	II

k. HAZARD CAUSES:

3. Materials that are incompatible with liquefied atmospheric gases are located near exposed cryogenic systems.

l. HAZARD CONTROLS:

3.1 Use only those materials that are compatible with liquefied atmospheric gases.

3.2 Shield materials from liquefied atmospheric gases.

m. SAFETY VERIFICATION METHODS:

3.1.1 Review of flight hardware/GSE layout for proper material usage.

3.2.1 Review of flight hardware/GSE design and layout to ensure proper protection.

n. STATUS OF VERIFICATION:

3.1.1. Open

3.2.1. Open